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(FILE 'HOME' ENTERED AT 18:37:32 ON 23 JAN 2008)  
FILE 'CA' ENTERED AT 18:37:41 ON 23 JAN 2008  
L1 2809 S COTRELL OR COTTRELL OR FARADAIC(1A) (CURRENT OR RESPONSE OR SIGNAL)  
L2 206 S L1 AND (AC OR(ALTERNATING OR A OR OSCILLATING OR MODULAT?)) (1W)  
(CURRENT OR C) OR KHZ OR MHZ OR KILOHERTZ OR MEGAHERTZ OR (KILO OR MEGA) (W) (HERTZ OR HZ))  
L3 780 S L1 AND(CONDUCTIV? OR IMPED!N? OR RESISTIV? OR SENSOR OR DETECTOR OR ELECTRODE OR MICROELECTRODE OR BIOSENS? OR BIO SENS? OR ANALY!ER)  
L4 128 S L2 AND L3  
L5 927981 S FAILSAFE OR FAIL? OR DAMAG? OR WORKING OR ABUS? OR FAIL? OR MALFUNCTI?  
L6 15786 S L5(6A) (SENSOR OR DETECTOR OR ELECTRODE OR MICROELECTRODE OR BIOSENS? OR BIO SENS? OR ANALY!ER)  
L7 1112 S L6 AND (AC OR(ALTERNATING OR A OR OSCILLATING OR MODULAT?)) (1W)  
(CURRENT OR C) OR KHZ OR MHZ OR KILOHERTZ OR MEGAHERTZ OR (KILO OR MEGA) (W) (HERTZ OR HZ))  
L8 79935 S L5(6A) (DETECT? OR DETERMIN? OR TEST? OR ASSAY? OR MEASUR? OR MONITOR? OR EVALUAT? OR DISCERN?)  
L9 241 S L7 AND L8  
L10 13 S L7 AND(ADMIT? OR PHASE (1A) (ANGLE OR DIFFER?))  
L11 40 S L7 AND(EQUATION OR FORMULA OR ALGORITHM)  
L12 38 S L1 AND L6  
L13 4489 S L6(6A) (DETECT? OR DETERMIN? OR TEST? OR ASSAY? OR MEASUR? OR MONITOR? OR EVALUAT? OR DISCERN?)  
L14 252 S L7 AND L13  
L15 260 S L9,L14  
L16 130 S L15 AND(BLOOD OR SERUM OR BIOLOG? OR URINE OR SALIVA OR SUGAR OR GLUCOSE OR WATER OR AQUEOUS OR DNA OR OLIGONUCLEOTI? OR ELECTROCHEMIC? OR VECTOR OR BIOMOLEC?)  
L17 331 S L4,L10-12,L16  
L18 269 S L17 AND PY<2004  
L19 9 S L17 NOT L18 AND PATENT/DT AND PY<2005  
L20 278 S L18-19

=> d bib,ab 120 1-278

L20 ANSWER 1 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 147:517601 CA  
TI System and method for analyte measurement using a nonlinear sample response  
IN Buck, Harvey B.  
PA USA  
SO U.S. Pat. Appl. Publ., 41pp., Cont.-in-part of U.S. Ser. No. 688,312.  
PI US 2007264721 A1 20071115 US 2007-746465 20070509  
US 2004157337 A1 20040812 US 2003-688312 20031017  
PRAI US 2003-688312 A2 20031017  
US 1997-996280 B2 19971222  
WO 1998-US27203 W 19981221  
US 2000-530171 A3 20000424  
US 2002-264890 A2 20021004

US 2003-480298P P 20030620

AB The systems and methods of the present invention utilize a linear component of a non-linear, faradaic current response generated by a biol. fluid sample when an AC excitation potential sufficient to produce such a faradaic current response is applied to the sample, in order to calc. the concn. of a medically significant component in the biol. fluid sample. The current response is created by the excitation of electrochem. processes within the sample by the applied potential. Typically, the linear component of the current response to an applied AC potential contains phase angle and/or admittance information that may be correlated to the concn. of the medically significant component. Also typically, the fundamental linear component of the current response is utilized in the disclosed systems and methods. Harmonics of the fundamental linear component may also be used. Other methods and devices are disclosed. A sensor design had a single working electrode and two counter electrodes of the same dimension providing a sym. cell for AC measurement. The sensors were tested with blood samples having glucose ranging from 0 to 520 mg/dL and hematocrit ranging from 22 % to 65 %. Utilizing the method of the present invention and application of DC+128 Hz 300 mV AC+low-potential AC 10 kHz, the Total System Error for the expt. was 7.8 %.

L20 ANSWER 3 OF 278 CA COPYRIGHT 2008 ACS on STN

AN 142:402136 CA

TI AC response measurements of semiconductor gas sensors for temperature shift stimulation

AU Nitsch, Karol; Sobanski, Tomasz; Wisniewski, Kamil; Licznerski, Benedykt  
CS Faculty of Microsystem Electronics and Photonics, Wroclaw University of Technology, Wroclaw, 50-370, Pol.

SO International Spring Seminar on Electronics Technology: Integrated Management of Electronic Materials Production, Conference Proceedings, 26th, Stara Lesna, Slovakia, May 8-11, 2003 (2003), Meeting Date 2003, 389-393. Editor(s): Pietrikova, Alena; Urbancik, Jan. Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.

AB More advanced application based on semiconductor gas sensors required more sophisticated measuring methods. To achieve better accuracy level often a.c. methods were implemented into measuring systems. In this work attention was paid on measuring method consist in characterize impedance response of gas sensitive layer as a function of work temp. shift. Working temp. was changed between 20° to 750°. Automation measuring system for characterizing gas sensitive layer properties was described. Also the result of impedance and admittance measurements as a function of frequency and working temp. for com. and inhouse developed sensors was presented.

L20 ANSWER 6 OF 278 CA COPYRIGHT 2008 ACS on STN

AN 142:89413 CA

TI System and method for determining an abused sensor during analyte measurement in a biological fluid

IN Burke, David W.; Kuhn, Lance S.; Maxwell, James L.

PA Roche Diagnostics, G.m.b.H., Germany; F. Hoffmann-La Roche A.-G.

SO PCT Int. Appl., 98 pp.

PI	WO 2005001462	A1	20050106	WO 2004-US19640	20040618	
	US 2004259180	A1	20041223	US 2003-687850	20031017	
	US 2004256248	A1	20041223	US 2003-687958	20031017	
PRAI	US 2003-480298P	P	20030620			
	US 2003-688561	A	20031017			
	US 2003-687850	A	20031017			
	US 2003-687958	A	20031017			
AB	A method for detecting an abused sensor for detg. concn. of a medically significant component of a biol. fluid placed upon the sensor comprising the steps of: (a) placing the biol. fluid sample upon the sensor; (b) applying a first DC signal to the biol. fluid; (c) measuring a current response to the first DC signal; (d) repeating step (c) at least zone; (e) calcg. a normalized Cottrell Failsafe Ratio using the current response data; (f) applying a second signal having an AC component to the biol. fluid; (g) measuring an AC response to the second signal; and (h) combining the normalized Cottrell Failsafe Ration and AC response to produce an indication of whether the sensor has been abused.					
L20	ANSWER 40 OF 278 CA COPYRIGHT 2008 ACS on STN					
AN	136:342631 CA					
TI	Structured residual vector-based approach to sensor fault detection and isolation					
AU	Li, Weihua; Shah, Sirish					
CS	Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB, T6G 2G6, Can.					
SO	Journal of Process Control (2002), 12(3), 429-443					
AB	A novel approach is proposed to detection and isolation of faulty sensors in multivariate dynamic systems. After formulating the problem of sensor fault detection and isolation in a dynamic system represented by a state space model, the optimal design is developed of a primary residual vector for fault detection and a set of structured residual vectors for fault isolation using an extended observability matrix and a lower triangular block Toeplitz matrix of the system. This work is, therefore, a vector extension to the earlier scalar-based approach to fault detection and isolation. Besides proposing a new algorithm for consistent identification of the Toeplitz matrix from noisy input and output observations without identifying the state space matrixes {A, B, C, D} of the system, the main contributions of this newly proposed fault detection and isolation scheme are: (1) a set of structured residual vectors is employed for fault isolation; (2) after detn. of the max. no. of multiple sensors that are most likely to fail simultaneously, a unified scheme for isolation of single and multiple faulty sensors is proposed; and (3) the optimality of the primary residual vector and the structured residual vectors is proven. The advantage is proven of the newly proposed vector-based scheme over the existing scalar element-based approach for fault isolation and illustrate its practicality by simulated and exptl. evaluation on a multivariate pilot scale, computer interfaced system.					
L20	ANSWER 53 OF 278 CA COPYRIGHT 2008 ACS on STN					
AN	134:34240 CA					
TI	Second harmonic ac voltammetry study of a fast faradaic process in the					

AU presence of the uncompensated resistance  
AU Brevnov, D. A.; Finklea, H. O.  
CS Department of Chemistry, West Virginia University, Morgantown, WV,  
26506, USA  
SO Journal of Electroanalytical Chemistry (2000), 488(2), 133-139  
AB A procedure is presented for the anal. of faradaic admittance obtained by the second harmonic ac voltammetry in the presence of the uncompensated resistance. The procedure involves the anal. of the equiv. circuit with a current source at the double frequency and normalization of the second harmonic faradaic current to the square of the interfacial potential. A system was developed for both instrument control and data acquisition in order to implement this method. The procedure was applied to an ac quasi-reversible (over the frequency range 100 Hz to 1 kHz) case for a freely diffusing redox species Ru(NH<sub>3</sub>)<sub>6</sub><sup>3+</sup>. The validity of the suggested method was established by comparison of the parameters derived from the first and second harmonic faradaic admittance data.

L20 ANSWER 57 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 133:83539 CA  
TI Determining end of useful life of electrochemical gas sensor with consumable electrode  
IN Warburton, Piers Richard  
PA Industrial Scientific Corp., USA  
SO Brit. UK Pat. Appl., 53 pp.  
PI GB 2340612 A 20000223 GB 1999-16662 19990715  
US 6096186 A 20000801 US 1998-135058 19980818  
PRAI US 1998-135058 A 19980818  
AB The imminent failure of amperometric electrochem. gas sensors with at least one consumable electrode, due to consumption of the electrode, is detected. The sensor is preferably for oxygen and has consumable anode of lead or cadmium, cathode, and diffusion barrier. The sensor is normally operated in galvanic mode. In a 1st embodiment, when operated with a load resistor, remaining life can be detd. from output change when the load resistor is changed. In another embodiment, the conductance across the electrodes is detd. and compared with values for new and exhausted sensors. In further embodiments a.c. is applied across the electrodes and (1) the phase angle between the applied and resulting a.c. detd., or (2) the impedance between terminals detd., or (3) the a.c. is applied at two or more frequencies, an impedance spectrum is detd., compared to a model impedance circuit, and numerical parameters are detd. for that model circuit. In a further embodiment, the sensor is operated with const. applied potential, the potential is changed, and the remaining life is detd. from the resulting potential change.

L20 ANSWER 61 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 132:200223 CA  
TI Must ac voltammetry employ small signals?  
AU Engblom, S. O.; Myland, J. C.; Oldham, K. B.  
CS Department of Chemistry, Trent University, Peterborough, Can.  
SO Journal of Electroanalytical Chemistry (2000), 480(1,2), 120-132  
AB This paper revisits reversible a.c. voltammetry from a contemporary

viewpoint, stressing aspects that are not confined to small applied voltages. Exact new formulas are derived that give the heights of the a.c. voltammograms for both the fundamental and harmonic frequencies when the a.c. signal  $V\cos\{\omega t\}$  is applied across the faradaic element of a reversible working electrode, together with a slowly ramped d.c. voltage. At low values of a.c. voltage amplitude  $V$ , the magnitude of the peak a.c. current at the fundamental frequency is proportional to  $V$ , whereas this magnitude becomes independent of  $V$  when the latter is large. The phase shift is  $45^\circ$  under all conditions. This algebraically predicted behavior is supported by the results of Fourier transform calcns. of the shapes of the fundamental and harmonic a.c. waves. A new result, with exciting anal. implications, is that the area under an a.c. voltammogram is accurately proportional to  $V$  irresp. of  $V$ 's magnitude. A novel, and more useful, interpretation of faradaic admittance is suggested. A careful examn. of the roles played by uncompensated resistance and double-layer capacitance shows that the effects of these extraneous elements differ between the fundamental and harmonic frequencies. Formulas are presented for correcting for the presence of these circuit elements.

L20 ANSWER 75 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 129:73285 CA  
TI Potential-modulated reflectance spectroscopy of the methyl orange transfer across the water|1,2-dichloroethane interface  
AU Fermin, D. J.; Ding, Z.; Brevet, P.-F.; Girault, H. H.  
CS Ecole Polytechnique Federale de Lausanne, Departement de Chimie, Laboratoire d'Electrochimie, Lausanne, CH-1015, Switz.  
SO Journal of Electroanalytical Chemistry (1998), 447(1-2), 125-133  
AB The kinetics of methyl orange transfer across the water|1,2-dichloroethane interface is studied by potential-modulated reflectance (PMR) and a.c.-impedance. The frequency dependence anal. of both techniques provide complementary information about charge transfer kinetics and the potential distribution across the interface. The PMR signal is obtained under total internal reflection from the liq.|liq. interface. It is concluded that the PMR responses are originated from the a.c. flux of ion crossing the interface, and therefore provide a direct anal. of the faradaic responses. This technique is also less sensitive to uncompensated resistance effects in comparison to the admittance anal. In the case of methyl orange transfer, a std. apparent rate const. of  $(4.5 \pm 0.7) 10^{-2} \text{ cm s}^{-1}$  and a transfer coeff. of  $0.40 \pm 0.03$  were estd. from the frequency dependence of the PMR.

L20 ANSWER 77 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 129:35876 CA  
TI Titanium dioxide chemical sensor working with AC voltage  
AU Islam, Mohammed Rafiqul; Kumazawa, Noriyuki; Takeuchi, Manabu  
CS Department Electrical Electronic Engineering, Ibaraki University, Hitachi, 316, Japan  
SO Sensors and Actuators, B: Chemical (1998), B46(2), 114-119  
AB A novel method to distinguish chem. compds. is proposed, based on multidimensional information, derived from simple linear response. An

a.c. voltage was applied to a titanium dioxide (TiO<sub>2</sub>) semiconductor gas sensor. The resulting conductance, surface potential and phase difference of the input voltage-output current wave form were recorded. All the three parameters showed linear response to the concn. of the adsorbed chem. compds. in gaseous form and depended on their chem. structure. Three dimensional figure of these three linear parameters enabled the authors to distinguish alcs. and benzenes with a single detector.

L20 ANSWER 79 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 129:7400 CA  
TI Electrochemical method of in-tank monitoring of constituents in a conversion coating bath  
IN Ludwig, Frank A.  
PA USA  
SO U.S., 10 pp.  
PI US 5753101 A 19980519 US 1996-690769 19960801  
PRAI US 1996-690769 19960801  
AB The bath in conversion coating of metal substrates is monitored by using specific a.c. and d.c. voltammetry with Pt or similar working electrodes, resulting in the spectra useful for monitoring the bath constituents for a stable coating process. The voltammetric method includes: (a) positioning an annealed Pt-type electrode as the in-tank sensor for conversion coating, and applying a selected d.c. potential to promote the evolution of H<sub>2</sub> on the electrode; (b) superimposing a const. a.c. signal on the d.c. potential, and varying the d.c. potential at a selected sweep rate over a chosen range; and (c) measuring the d.c. and/or a.c. current (or a.c. harmonic) at  $\geq 1$  phase angles relative to the const.-a.c. voltage between the working and ref. electrodes in the bath, resulting in the current spectra used to monitor the controlled bath constituents. The voltammetric method is suitable for monitoring the conversion baths for chromating or phosphating (esp. with Zn, Fe, or Mn), typically with the annealed Pt electrode anodically pretreated with +2 V d.c. for 5 s and resistant to adherent coating with the conversion film. The bath for coating of metals with Zn phosphate can be monitored to control the content of nitrite accelerator, resulting in the stable bath with uniform coating coverage.

L20 ANSWER 86 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 127:144495 CA  
TI Large amplitude sinusoidal voltammetry  
IN Kuhr, Werner G.; Cullison, John K.  
PA Regents of the University of California, USA  
SO U.S., 17 pp.  
PI US 5650061 A 19970722 US 1995-529661 19950918  
PRAI US 1995-529661 A2 19950918  
AB A large amplitude sine wave is applied as the excitation potential to a amperometric measurement to produce a current output that is a phase shifted sine wave contg. faradaic information at many frequencies. A current obtained from a conventional potentiostat coupled to the electrode is coupled to a lock-in amplifier that monitors the signal at one frequency at a specified phase angle. Since most of the background remains at the fundamental frequency, a higher harmonic of the

fundamental frequency of the sinusoidal sweep frequency is monitored. By locking in on the higher harmonic components, the faradaic signal is therefore distinguished from the background signal. The background is diminished thereby allowing signal recognition at low analyte concns. and increasing the signal-to-noise ratio.

L20 ANSWER 109 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 121:276164 CA  
TI Biosensing meter with fail-safe procedures to prevent erroneous indications  
IN White, Bradley E.; Parks, Robert A.; Ritchie, Paul G.; Svetnik, Vladimir  
PA Boehringer Mannheim Corp., USA  
SO U.S., 11 pp.  
PI US 5352351 A 19941004 US 1993-73180 19930608  
PRAI US 1993-73180 A 19930608  
AB A biosensing meter receives a sample strip that includes elec. isolated sense and excitation electrodes bridged by a reaction zone. When a drop of biol. sample fluid is placed in the reaction zone, a plurality of fail-safe tests are performed. A drop-size test is performed by a circuit that detects the size of the drop placed in the reaction zone. The circuit both detects that a drop has been placed in the reaction zone and further measures a test current level, after a delay, to det. that the drop size is sufficient to enable hydration of reactants in the reaction zone. Subsequently, during the reaction, a delta current change is measured at succeeding sample time. This test measures the difference between succeeding current samples during a measurement time. If each succeeding sample is not less than preceding sample by a delta value, a detn. is made that the current is not monotonically decreasing and the test is aborted. At the termination of the measurement time, a current sum test is performed wherein a processor calcs. a linear sum of all sample test currents and calcs. a ratio between that sum and the last current sample. If that ratio matches a pre-calcd. const. for the Cottrell relationship, then it is known that the measurement values exhibit the Cottrell relationship. Diagrams of the app. are included.

L20 ANSWER 142 OF 278 CA COPYRIGHT 2008 ACS on STN  
AN 111:89471 CA  
TI Electrochemical method for determination of surfactants in plating solutions  
IN Bonivert, William D.; Farmer, Joseph C.; Hachman, John T.  
PA United States Dept. of Energy, USA  
SO U.S., 6 pp.  
PI US 4812210 A 19890314 US 1987-109008 19871016  
PRAI US 1987-109008 19871016  
AB An arrangement for measuring the concn. of surfactants in an electrolyte contg. metal ions includes applying a d.c. bias voltage and a modulated voltage to a counter electrode. The phase angle between the modulated voltage and the current response to the modulated voltage at a working electrode is correlated to the surfactant concn. A fast and accurate measurement of surfactant concn. is provided using a stationary working electrode suited to hand-held wands and flow-through cells.

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STN INTERNATIONAL LOGOFF AT 19:00:03 ON 23 JAN 2008

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(FILE 'HOME' ENTERED AT 10:44:12 ON 23 JAN 2008)  
FILE 'CA' ENTERED AT 10:44:26 ON 23 JAN 2008  
L1 2155 S COTRELL OR COTTRELL  
L2 188 S L1 AND (AC OR(ALTERNATING OR A OR OSCILLATING) (1A) (CURRENT OR C)  
L3 580631 S FAILSAFE OR FAIL? OR DAMAG? OR WORKING OR ABUS?  
L4 270 S L1 AND(CONDUCTIV? OR IMPED!N? OR RESISTIV? OR SENSOR OR DETECTOR  
OR ELECTRODE OR MICROELECTRODE OR BIOSENS? OR BIO SENS?)  
L5 41 S L2 AND L4  
L6 14403 S L3 (6A) (SENSOR OR DETECTOR OR ELECTRODE OR MICROELECTRODE OR  
BIOSENS? OR BIO SENS?)  
L7 1171 S L6 AND (AC OR(ALTERNATING OR A OR OSCILLATING) (1A) (CURRENT OR C)  
L8 95 S L7 AND(ADMIT? OR PHASE (1a) (angle)  
L9 10 S L1 AND L6  
L10 45 S L7 AND(EQUATION OR FORMULA OR ALGORITHM)  
L11 182 S L5,L8-10  
L12 151 S L11 AND PY<2004  
L13 10 S L11 NOT L12 AND PATENT/DT  
FILE 'INSPHYS' ENTERED AT 11:01:57 ON 23 JAN 2008  
L14 5 S L12  
FILE 'INSPEC' ENTERED AT 11:02:40 ON 23 JAN 2008  
L15 40 S L12  
FILE 'BIOSIS' ENTERED AT 11:03:19 ON 23 JAN 2008  
L16 8 S L12  
FILE 'MEDLINE' ENTERED AT 11:03:47 ON 23 JAN 2008  
L17 2 S L12  
FILE 'CA, INSPHYS, INSPEC, BIOSIS, MEDLINE' ENTERED AT 11:04:47 ON 23  
JAN 2008  
L18 195 DUP REM L12 L13 L14 L15 L16 L17 (21 DUPLICATES REMOVED)

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STN INTERNATIONAL LOGOFF AT 11:06:30 ON 23 JAN 2008